GP-301019

SYSTEM AND METHOD FOR ESTIMATING
ROTOR POSITION OF A PERMANENT MAGNET MOTOR

ABSTRACT OF THE DISCLOSURE

A rotor position estimator for a permanent magnet motor with a stator and a rotor includes a sensing circuit that generates d-axis and q-axis negative sequence stationary current (NSSC) signals. A signal conditioning circuit combines the d-axis and q-axis NSSC signals with first and second positive feedback signals that are based on a rotor position estimate signal. A regulator is coupled to an output of the signal conditioning circuit. A mechanical system simulator that is coupled to the regulator and a demand torque signal generates the rotor position estimate signal. The signal conditioning circuit includes a second harmonic amplifying circuit that receives the rotor position estimate signal and outputs the first feedback signal to a first multiplier. The signal conditioning circuit includes an inverse saliency model receives the rotor position estimate signal and outputs the second feedback signal to a second multiplier.